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I HEREBY CERTIFY that annexed hereto is a true copy of  
documents filed in connection with the following patent  
application:

Application No. S990634

4

Date of Filing 26 July 1999

Applicant OGLESBY & BUTLER RESEARCH &  
DEVELOPMENT LIMITED, an Irish company of  
Industrial Estate, Dublin Road, Carlow, Ireland.

Dated this 17 day of August, 2000.

An officer authorised by the  
Controller of Patents, Designs and Trademarks.

## REQUEST FOR THE GRANT OF A PATENT

PATENTS ACT, 1992

§ 990634

The Applicant(s) named herein hereby request(s)  
☐ the grant of a patent under Part II of the Act

☒ the grant of a short-term patent under Part III of  
the Act

on the basis of the information furnished hereunder.

1. Applicant(s)

<u>Name</u>	OGLESBY & BUTLER RESEARCH & DEVELOPMENT LIMITED, Industrial Estate,
<u>Address</u>	-Dublin Road, Carlow, Ireland.
<u>Description/Nationality</u>	An Irish company.

2. Title of Invention "A heating device"

3. Declaration of Priority on basis of previously filed  
application(s) for same invention (Sections 25 & 26)

<u>Previous filing date</u>	<u>Country in or for which filed</u>	<u>Filing No.</u>
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4. Identification of Inventor(s)

Name(s) of person(s) believed  
by Applicant(s) to be the inventor(s)

<u>Address</u>	JOHN PAUL OGLESBY, Anneville, Shrule, Carlow, Ireland.
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A British subject.

CONTINUED OVER

5. Statement of right to be granted a patent (Section 17 (2) (b) )

The applicant has demanded the right to be granted a patent from the inventor by virtue of a Deed of Assignment dated July 23, 1999.

6. Items accompanying this Request - tick as appropriate

- (i) ☒ Prescribed filing fee (£ 50.00 )
- (ii) ☐ Specification containing a description and claims
- ☒ Specification containing a description only
- ☒ Drawings referred to in description or claims
- (iii) ☐ An abstract
- (iv) ☐ Copy of previous application(s) whose priority is claimed
- (v) ☐ Translation of previous application whose priority is claimed
- (vi) ☐ Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

7. Divisional Application(s)

The following information is applicable to the present application which is made under Section 24 -

Earlier Application No: .....

Filing Date: .....

8. Agent

The following is authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted -

Name

Address

F.F. GORMAN & CO.

54 Merrion Square,  
Dublin 2,  
Ireland.

9. Address for Service (if different from that at 8)

F.F. GORMAN & CO., at its address as recorded for the time being in the Register of Patent Agents.

OGLESBY & BUTLER RESEARCH & DEVELOPMENT LIMITED

BY: 

CAPACITY: Managing Director

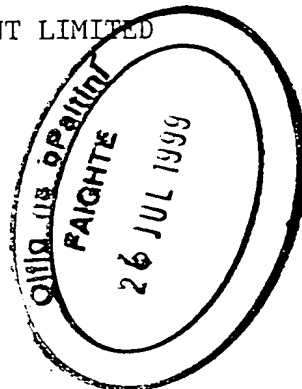
Signed

Name(s):

Capacity (if applicant is a body corporate):

Date

July 23, 1999



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APPLICATION 12

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"A heating device"

The present invention relates to a heating device, and in particular, to a gas powered heating device, for example, a glue gun or other such devices.

5 Gas powered heating devices comprise a combustion chamber within which gas is converted to heat. The gas may be converted to heat by flame combustion, or catalytic combustion. However, in both cases exhaust gases are exhausted from the combustion chamber. These  
10 gases, in general, tend to be at a relatively high temperature, and in many instances, it is undesirable to outlet the exhaust gases to atmosphere at such high temperatures. The temperature of the exhaust gases, may be such as to cause damage or injury. For example, in  
15 the case of a gas powered glue gun exhaust gases at a relatively high temperature exiting from an exhaust outlet port may damage the article, for example, furniture or the like on to which the melted glue is being dispensed. As well as the potential dangers of  
20 ~~exhaust gases of excessively high temperatures,~~  
exhausting such gases, is inefficient, since the heat contained in the exhaust gases is lost to atmosphere with no benefit.

There is therefore a need for a heating device which

overcomes these problems.

The present invention is directed towards providing such a heating device.

According to the invention there is provided a heating  
5 device comprising a main housing defining a combustion  
chamber within which gas is converted to heat for  
heating the main housing, an exhaust gas outlet port  
from the combustion chamber for exhausting burnt gases  
therefrom, a working body member of heat conductive  
10 material in heat conductive engagement with the main  
housing for receiving heat from the main housing, and a  
heat exchange means located adjacent the working body  
member and communicating with the exhaust port for  
receiving exhaust gases therefrom and for transferring  
15 heat from the exhaust gases to the working body member  
for reducing the temperature at which the exhaust gases  
exit from the heating device.

In one embodiment of the invention the heat exchange  
~~means comprises a plurality of spaced apart heat~~  
20 exchange fins extending from the working body member,  
the heat exchange fins defining an exhaust gas  
passageway communicating with the exhaust port for  
receiving and conducting the exhaust gases from the  
exhaust port to atmosphere. Preferably, the heat

exchange fins define a circuitous exhaust gas passageway. Advantageously, a cover is provided around the working body member adjacent the heat exchange fins for defining with the working body member, the heat  
5 exchange fins and the exhaust gas passageway.

In one embodiment of the invention the heating device is a glue gun, and the working body member defines a heating chamber for melting glue therein. Preferably, a dispensing nozzle extends from the heating chamber for  
10 dispensing melted glue. Advantageously, the heating chamber is an elongated heating chamber for receiving glue in the form of an elongated stick, and preferably, the dispensing nozzle extends parallel to the heating chamber, and ideally, is coaxial therewith.

15 In one embodiment of the invention the heat exchange means is located adjacent the dispensing nozzle.

In one embodiment of the invention the main housing defines an elongated combustion chamber, and  
~~preferably, the combustion chamber extends parallel to~~  
20 the heating chamber. Ideally, a fuel gas inlet is located at one end of the combustion chamber, and the exhaust port is located at the other end thereof, preferably, the exhaust port is located at an end adjacent the dispensing nozzle.

In one embodiment of the invention the combustion chamber is adapted for receiving a gas catalytic combustion element for converting gas to heat by catalytic action.

- 5 The invention also provides a glue gun comprising the heating device according to the invention.

The invention will be more clearly understood from the following description of an embodiment thereof which is given by way of example only with reference to the  
10 accompanying drawings, in which:

Fig. 1 is a perspective view of a heating device according to the invention for use with a glue gun, also according to the invention,

15 Fig. 2 is a cross-sectional side elevational view of a portion of the heating device of Fig. 1,

Fig. 3 is a front perspective view of another  
~~portion of the heating device of Fig. 1.~~

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Fig. 4 is rear perspective view of the portion of Fig. 3,

20 Fig. 5 is a front end elevational view of the

portion of Fig. 3,

Fig. 6 is a rear end elevational view of the portion of Fig. 3,

Fig. 7 is a front perspective view of another portion of the heating device of Fig. 1,

Fig. 8 is a rear perspective view of the portion of Fig. 7, and

Fig. 9 is a transverse cross-sectional side elevational view of a portion of the heating device of Fig. 1.

Referring to the drawings there is illustrated a heating device according to the invention indicated generally by the reference numeral 1 for use with a glue gun (not shown). Such glue guns will be well known to those skilled in the art, in this embodiment of the invention the glue gun is of the type which is suitable for melting an elongated stick of glue and dispensing the heated melted glue. The heating device 1 comprises a main housing 2 and a working body member 3, both of which are integrally formed by di-casting and are of heat conductive material, namely, brass. The main housing 2 defines an elongated combustion chamber 5 of



circular transverse cross-section, within which a gas catalytic combustion element (not shown) is located. The catalytic combustion element in this embodiment of the invention is provided by a perforated metal carrier  
5 which is formed into a tubular shape and is located coaxially in the combustion chamber 5. The carrier is coated with appropriate catalytic material, typically, precious metals. A gas inlet 7 for receiving fuel gas is located at one end of the combustion chamber 5, and  
10 a venturi mixer 8 is located adjacent the gas inlet 7 for mixing the fuel gas with air for delivery into the combustion chamber 5 through an inlet port 9. The opposite end 11 of the combustion chamber 5 is open and forms an exhaust gas outlet port 10 from which exhaust  
15 gases are exhausted from the combustion chamber 5. An inspection port 13, which is closed by a lens (not shown) permits inspection of the combustion chamber 5 to determine if combustion is taking place.

The working body member 3 defines an elongated heating  
20 chamber 12 of circular transverse cross-section for ~~receiving glue in stick form and for heating and~~  
melting the glue. The heating chamber 12 extends parallel to the combustion chamber 5 and terminates at the end 11 adjacent the exhaust port 10 in a dispensing  
25 nozzle 15 through which heated melted glue is dispensed. A suitable urging mechanism for urging the

stick glue through the heating chamber 12 and for in turn dispensing the melted glue through the dispensing nozzle 15 is provided in the glue gun but is not illustrated. Such urging mechanisms will be well known to those skilled in the art.

A cover 17 extends around the dispensing nozzle 15 from the exhaust port 10 for directing exhaust gases from the exhaust port 10 around the dispensing nozzle 15. A heat exchange means comprising a plurality of heat exchange fins 19 extend from each side of the dispensing nozzle 15 and are located within the cover 17 for transferring heat from the exhaust gases from the exhaust port 10 to the dispensing nozzle 15, for adding additional heat to the nozzle 15, and in particular for reducing the temperature of the exhaust gases exiting from the heating device 1. The cover 17 sealably engages the main housing 2 at the end 11 for forming a duct 20 therewith for accommodating the exhaust gases from the exhaust port 10 to the heat exchange fins 19. The cover 17 also sealably engages ~~the working body member 3 and the dispensing nozzle 15~~ and forms with the working body member 3, the dispensing nozzle 15 and the heat exchange fins 19 a pair of circuitous passageways 22 through which the exhaust gases pass over the heat exchange fins 19. An exhaust outlet formed by a plurality of exhaust outlet

slots 23 in the cover 17 exhausts the exhaust gases from the heating device 1. The heat exchange fins 19 extend from the dispensing nozzle 15 in staggered relationship for forming the circuitous passageways 22, the shape of one of the passageways 22 is shown by the arrows A in Fig. 2. A wire mesh flame trap 25 is located at the beginning of the passageways 22 adjacent the exhaust port 10 for preventing any danger of a flame passing through the passageways 22, for example, during initial flame ignition of the fuel gas/air mixture for raising the catalytic combustion element to its ignition temperature.

In use, with the gas catalytic combustion element (not shown) located in the combustion chamber 5, and a fuel gas supply connected to the gas inlet 7 and a stick of glue located in the heating chamber 12, the heating device 1 of the glue gun is ready for use. When the working body member 3 has been raised to an appropriate temperature for melting the glue, the glue commences to melt from the end adjacent the dispensing nozzle 15 of the heating chamber 12. The melted glue is then urged through the nozzle 15 by urging the glue stick into the heating chamber 12. Exhaust gases existing from the exhaust port 10 are conducted through the passageways 22 over the heat exchange fins 19 for transferring residual heat in the exhaust gases into the nozzle 15.

This, thus, provides a more efficient heating device, since heat in the exhaust gases which would otherwise be wasted is transferred into the dispensing nozzle 15 for further heating the glue. Additionally, by virtue of the fact that further heat is extracted from the exhaust gases by the heat exchange fins 19 the exhaust gases exit from the heating device 1 through the exhaust outlet slots 23 at a much lower temperature than would otherwise be the case, thereby minimising and effectively eliminating any damage which may be caused by the exhaust gases.

While the heating device has been described as comprising a working body member which forms a heating chamber for melting glue, it is envisaged that the heating device may be provided with any other type of working body member, for example, the working body member may be the heating tip of a soldering iron, a working body member for heating a curling tongs, a working body member of a clothes pressing iron, or the like.

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The invention is not limited to the embodiment hereinbefore described which may be varied in construction and detail.

FIG 1

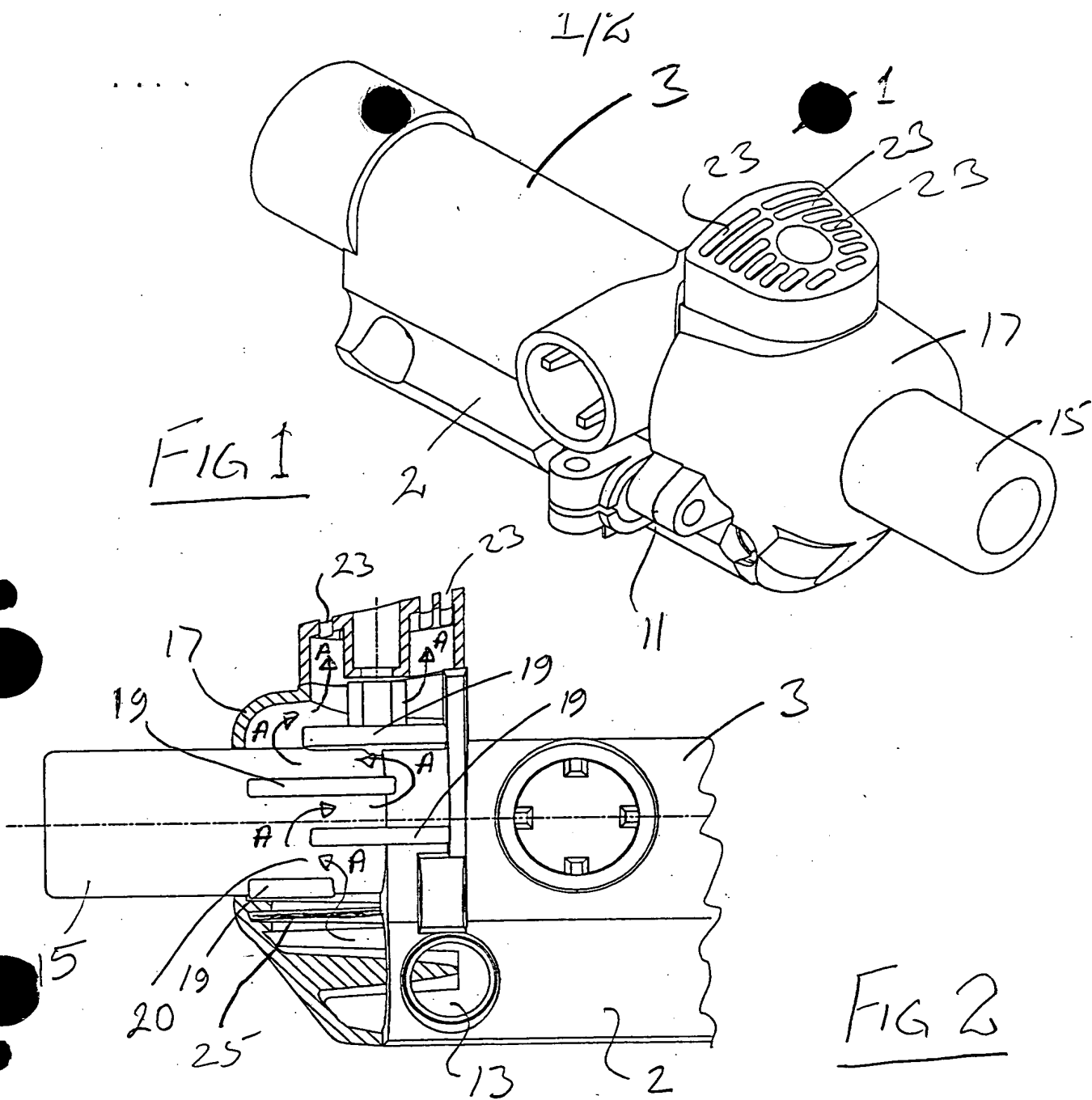
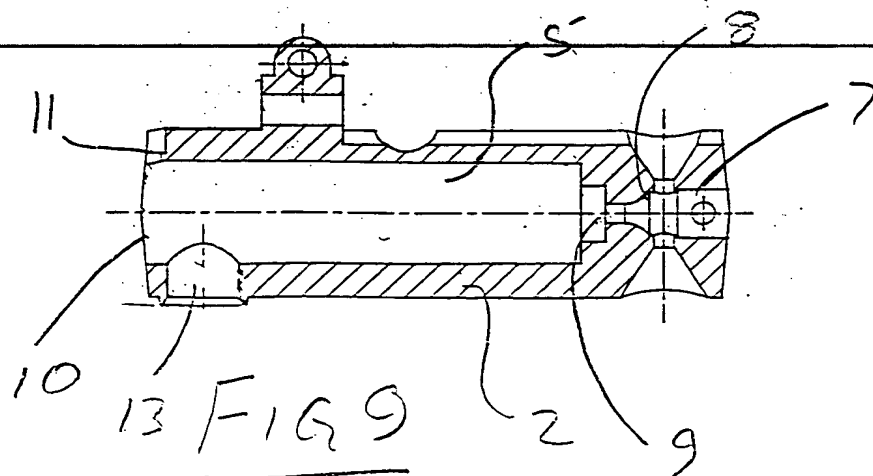


FIG 2



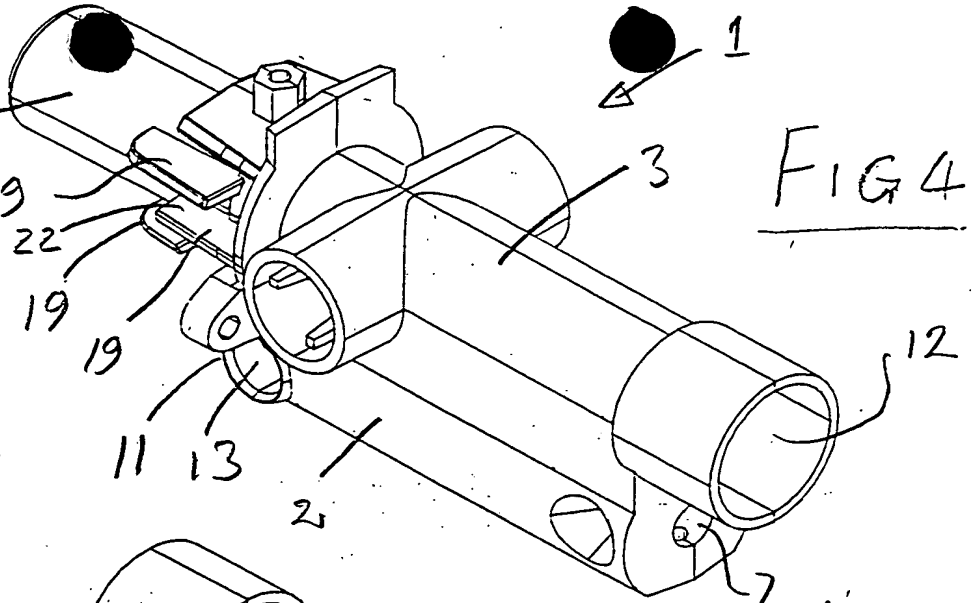
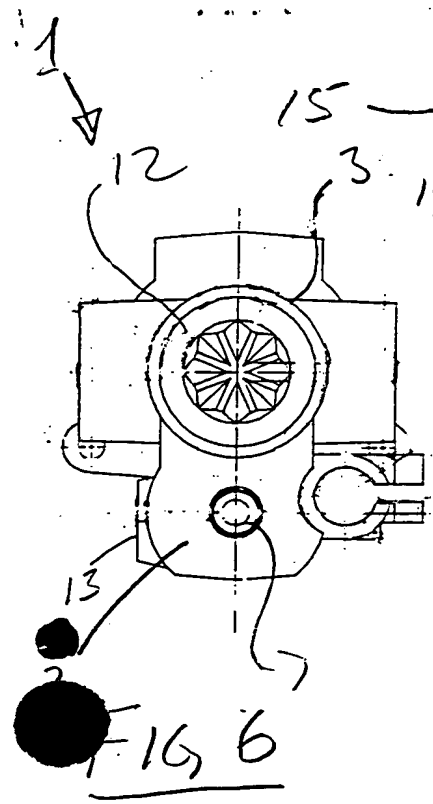


FIG 4

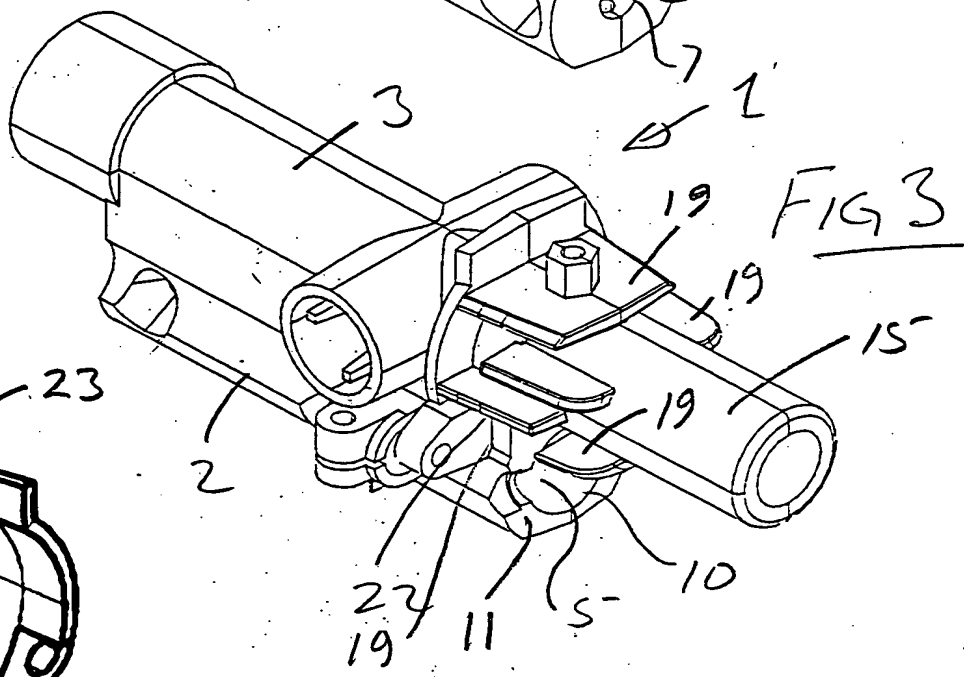


FIG 3

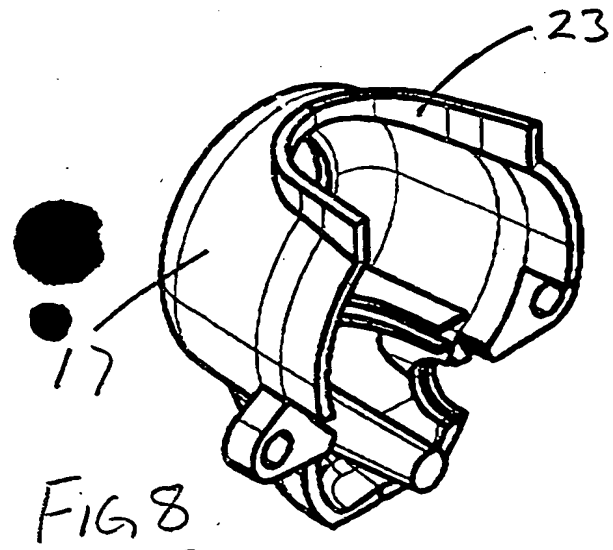


FIG 8

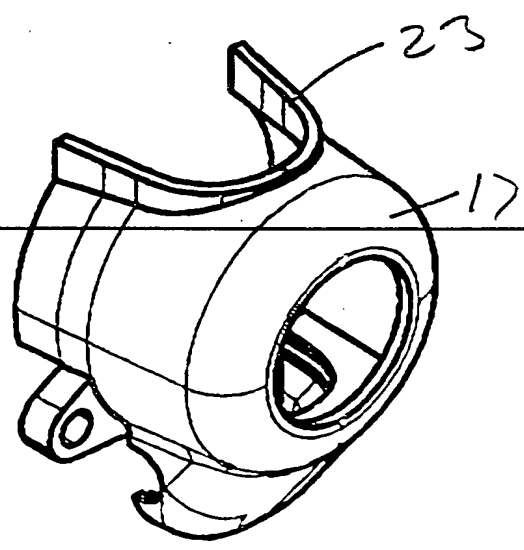


FIG 7

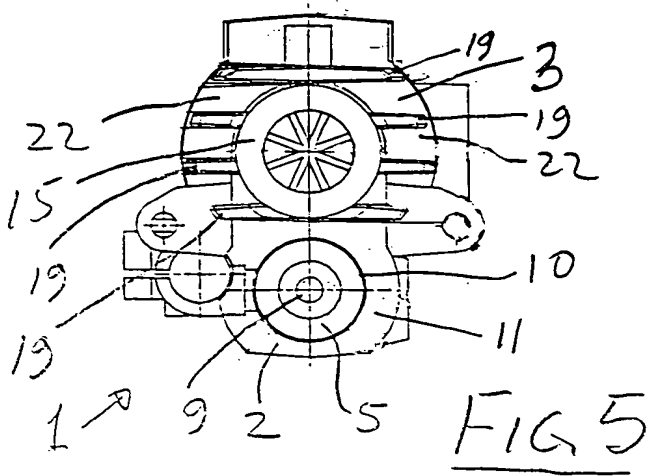


FIG 5